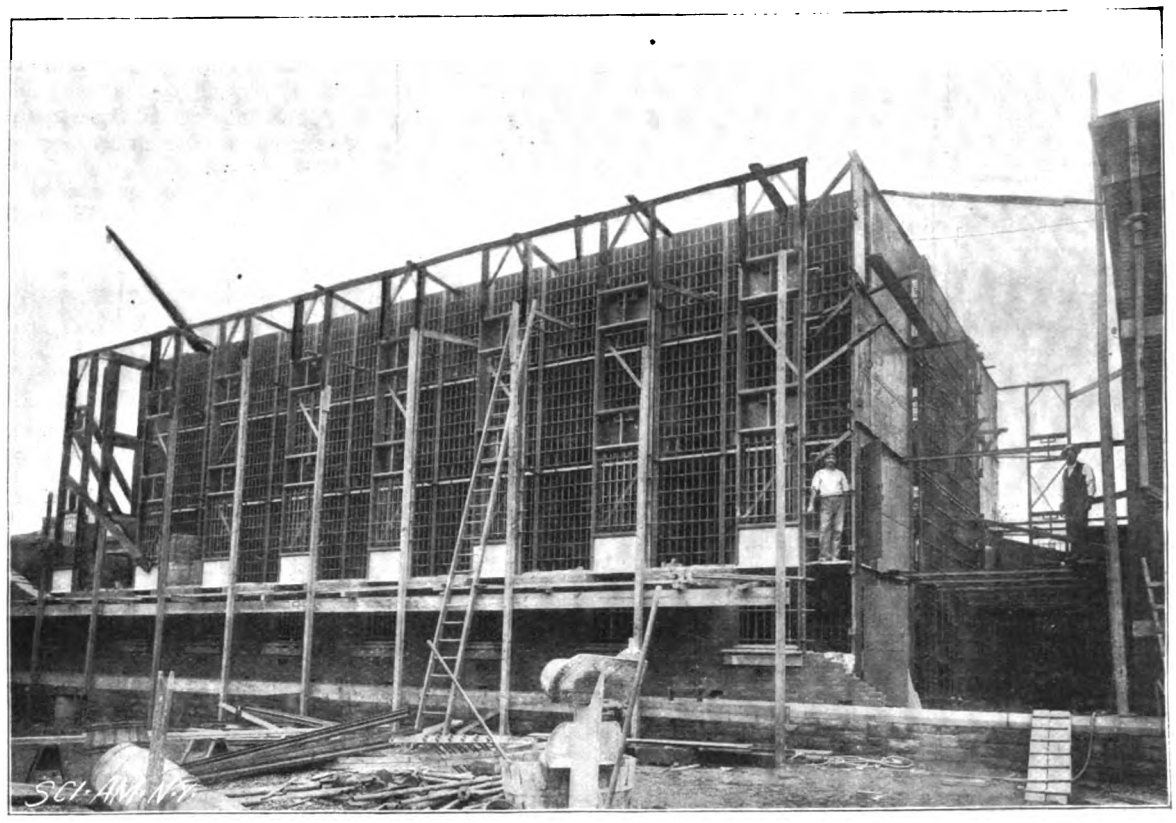
THE STEEL CELL AND CENTRAL CORRIDOR SYSTEM OF PRISON CONSTRUCTION.

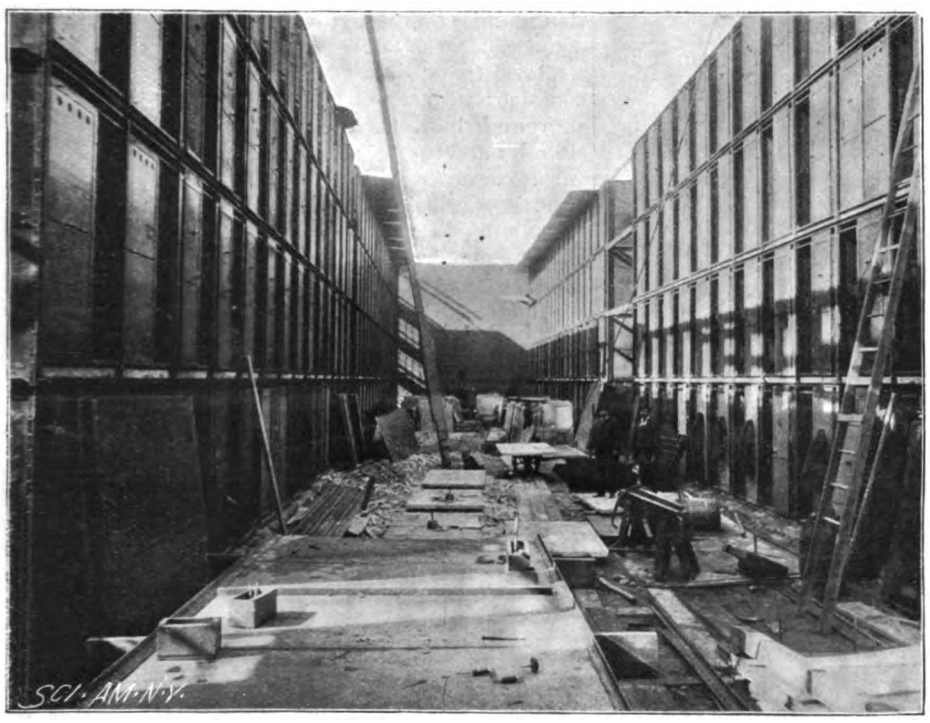
The new addition to the Erie County Penitentiary at Buffalo marks a departure from the commonly accepted methods of prison construction, and introduces features which not only increase the security with which the prisoner is held, but conduce to far better sanitary conditions than obtain under the common methods of construction. A prison building constructed on the ordinary lines consists of strong outer walls pierced with grated windows, inclosing a central block of cells, which have balconies provided at each story. The cells are provided with swing doors opening onto the balconies, and the balconies are provided with a railing which is usually about 3 or 4 feet high.

There are several objections to this system. In the first place, the security of the prison depends upon the outer walls and the gratings which cover the windows. Then the heating and ventilation are generally imperfect, the higher rows of cells becoming too warm and the lower too cold, as the result of the heated air rising to the top of the main building. The lighting also is usually very poor, as the cells are from 15 feet to 20 feet removed from the outer wall of the building, and the only light that the prisoner gets comes through the grated doorway of the cell. There is a further objection to this system on account of the unprotected condition of the balconies, which, with their low railings, present an easy means of violence by the prisoner throwing himself or the turnkey over, as has at times been done.

The Erie County Penitentiary has been designed with a view to obviating these defects. It will be seen by reference to Figs. 1 and 2 that many of the features just enumerated have been entirely reversed, and that instead of being from 15 to 20 feet from the outer walls, the cells are now placed only 3 feet distant from the walls, thereby providing a wide and roomy corridor down the center of the steel inclosure. This corridor, which is lighted by a skylight which extends over the entire length of it, forms a very commodious exercise corridor and a space in which the prisoners may be safely fed if so desired.



THE STEEL CELLS BEFORE OUTER WALLS WERE CARRIED UP.



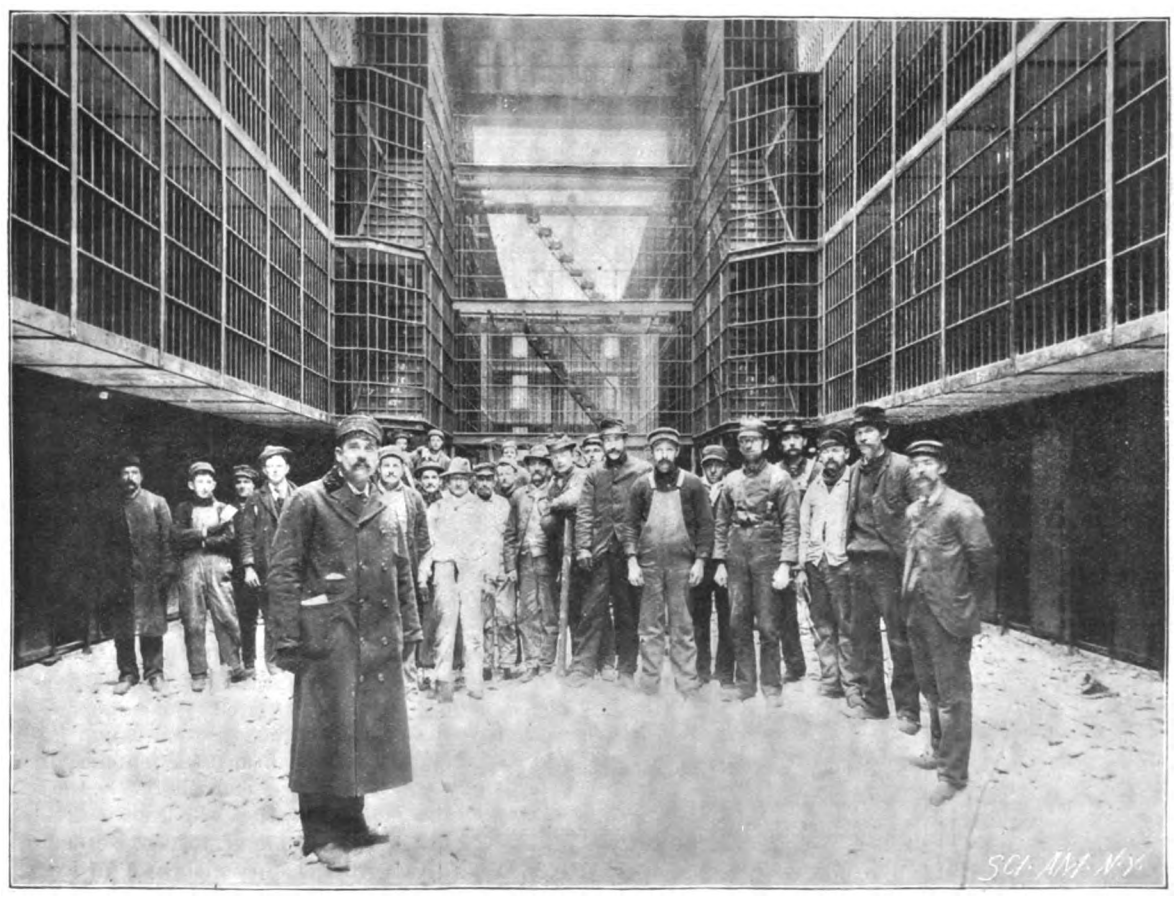
CENTRAL CORRIDOR BEFORE CONSTRUCTION OF BALCONIES.

The exterior walls of the 300 cells and the ceilings inclosing them are made of tool-proof steel grating. The vertical bars of this grating (see Figs. 3 and 4) consist of $1\frac{1}{8}$ inch hexagonal steel spaced 6 inches on centers. The cross bars measure $\frac{3}{4}$ inch by 3 inches and are placed 12 inches on centers, the whole being interlocked in the following manner: The hexagonal vertical bars are provided at every 12 inches of their height with a circular recess, as shown in Fig. 4, which gives 12 shoulders, 6 above and 6 below the cross bars. In putting the grating together, the vertical is inserted into the horizontal (the opening of the latter being hexagonal in shape) and is given one-sixth of a turn, so as to bring the projecting shoulders above and below the metal of the cross bars and securely lock them together. A counterlocking bar is then placed at the top of the joint and is riveted securely to it. It will be seen from Fig. 3 that the counterlocking bar prevents the vertical bar from being turned back, and, consequently, when the prison grating is once set up, the whole system is firmly locked together. The bars are made of a steel which is saw, file and drill proof, and it renders unnecessary the heavy outer walls which are common in prison construction.

Ventilation and the separation of each tier of cells is secured in the following way: On the outer walls of the building in each story are located ordinary steam heating pipes, and above each set of these are the cold air registers. Each section or story is arranged so that the register and the steam can be turned on independently. The air, heated by the pipes, passes through the cells and underneath the door at the front of the cells and then rises to the skylight above the central corridor, as indicated by arrows in Fig. 2. It will thus be seen each prisoner secures the first use of the pure air from the outside. Each cell, moreover, is supplied with additional registers, which can be operated by the prisoner himself, who can regulate the heat at will.

The three feet of space between the cells and the outer wall is utilized as a jailer's corridor, through which the guard can observe the movements of the prisoners. This, it will be understood, is the only side of the cell that is provided with gratings; the floor, ceiling, side walls, and the door opening onto the prisoners' balcony being made of plate steel, and it is through this grating that the prisoners receive the abundance of light from the large windows only three feet away in the main outer wall of the building. The plate steel door of the cell is furnished with a ventilator which is so arranged that when the cell is closed observation of the opposite cell and vice versa is impossible. This, it may be remarked, is the first prison in this country that has been so arranged that a prisoner can be isolated from his fellow prisoners, and obtain an abundance of light and independent ventilation without being thrown in contact with his fellow prisoners. It will be seen, from the illustration of the central exercise corridor and balconies, that the railings around the balconies are extended the whole height of each story, so as to make it impossible for a prisoner to jump over or force his keeper or other prisoners over the balcony rail. The inclosure of each balcony separately gives the keeper an easy means of separating different classes of prisoners and of taking each class out independently for exercise in the central corridor or for work in the shops.

The locking bars governing the doors of the cells are so arranged as



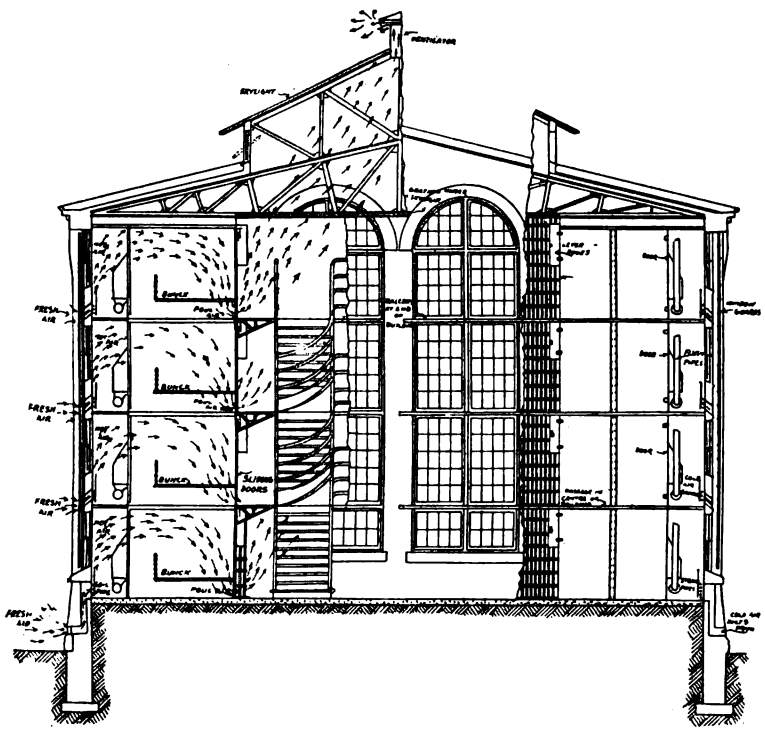
CENTRAL EXERCISE CORRIDOR AND BALCONIES, ERIE COUNTY PENITENTIARY, BUFFALO.

Digitized by Google

to allow the entire row of cells to be locked or unlocked by the movement of one lever. At the same time the interlocking is such that a single prisoner can be removed or incarcerated without disturbing the lock bars on the other cells. On the other hand, if the keeper wishes to retain one or more prisoners, releasing the others, he can do this by a simple operation of the lock bar, unlocking the desired number of cells and leaving the balance locked.

About midway of the length of the central corridor the various balconies are connected by a short cross gallery, or watch tower, as it is called, from which the guards are able to watch the door of every cell in the building. The guards' walk at the rear of the cells is built of stone, and is carried on steel angles, which are placed at the same height as the cell floors; outer angles being laid up as the masonry progresses. This walk serves, as we have already described, to form a complete floor from the corridor side of the cells to the outside door of the building, and, as it is perfectly airproof, the system of ventilation, as above described, is carried out to perfection.

This separation of the cells conduces to considerable economy in the operation of the prison, inasmuch as if only one line, or say twenty or thirty cells, are in use, it is possible to heat this particular floor, thus doing away with the necessity of heating the whole prison when only one-half or one-quarter of it is in actual use. The plans of this building were drawn up by the Van Dorn Iron Works Company, of Cleveland, O., the builders of the cellwork, to whom we are indebted for our illustrations and particulars.



2.—CROSS SECTION SHOWING METHOD OF VENTILATION.

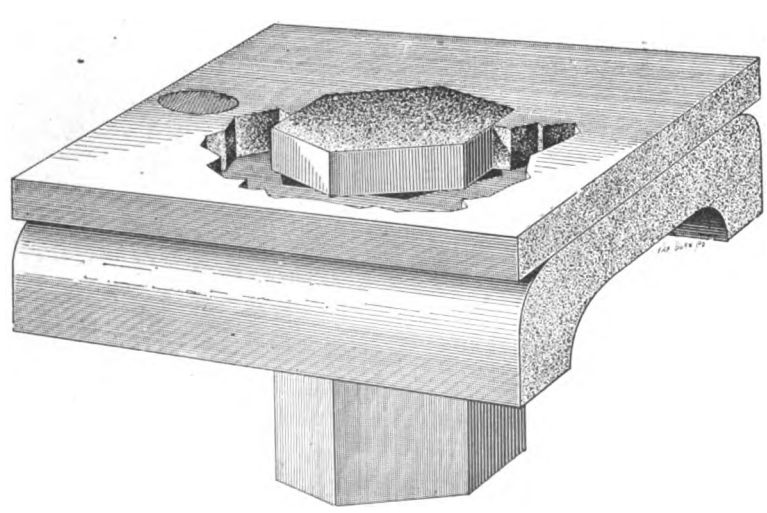
Tuberculous Disease in Fishes.

An interesting contribution to comparative pathology, by Prof. Dubard, of the Dijon school of medicine, is published in the Province Médicale, says the New York Medical Journal. M. Dubard begins his communication with the remark that chance often effects more than patient investigation, as is shown by the fact that after several years spent in bacteriological studies of cold-blooded animals he lately had the good fortune to observe a remarkable case of tuberculous disease in the carp. He then goes on to say that he has long been engaged in trout culture in an abundant spring of pure cold water, of a temperature of from 53·6° to 57·2° F., on a piece of property situated near Dijon. In a reserved portion of the stream eight carps, the remnants of experiments in pisciculture, were placed in October, 1895. For two or three years servants had habitually cast into this part of the watercourses the dejecta and sputa of a person suffering with tuberculous disease of the lungs and intestines.

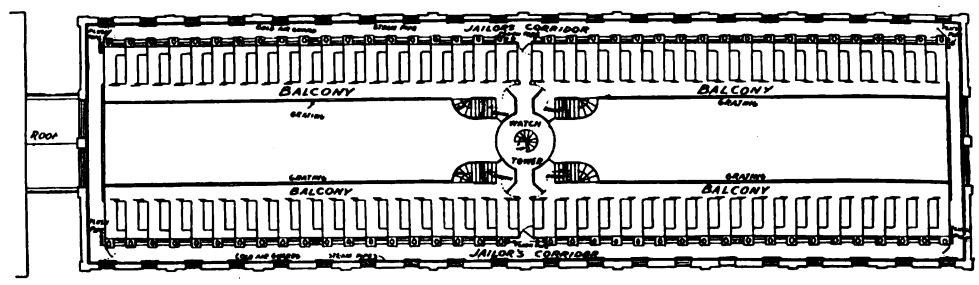
At the beginning of the winter one of the carps died, and its condition of putrefaction precluded any examination into the causes of the lesions it presented, but M. Dubard's attention was directed to the state of the remaining carps. Three of the seven were found to have tumors of the flank, and these were investigated jointly by M. Bataillon, M. Tene, and M. Dubard. It was found that the first tumor observed, on February 20, 1897, was as large as a hen's egg and had the consistence of a sarcoma. It was formed at the expense of the kidney. Although readily concealable in places, it was elsewhere continuous with the sound renal tissue. Microscopical preparations of the growth showed innumerable bacilli which stained like Koch's bacillus. Amid the lumina of the vessels and the connective tissue, both more or less inflamed and invaded by leucocytes, there were the same bacilli, some of them free, but most of them included in phagocytes. At certain points the formation of tuberculous giant cells was readily recognized.

An extensive series of cultures and inoculations was undertaken. The cultures succeeded at the ordinary temperature, about 57·2° F., but they did better at from 69·6° to 80·6°. At from 96·8° to 98·6° their growth was slow and very difficult to start. There is little difficulty, remarks M. Dubard, in choosing a suitable medium for this micro-organism, but its development requires the presence of oxygen. All the cultures produce bacillary toxines identical with the toxines of the tuberculous disease of birds. On cultures that are a little old there are found dichotomous forms, filaments more elongated and flattened and presenting points where the coloring matter accumulates to a degree suggesting the existence of chlamydospores. On solid media, the closer the temperature to 96·8° F., the more does the dry, scaly look of the cultures distinguish them from those of the tuberculous disease of birds and make their characteristics those of a culture of human bacilli. If bouillon is used, whether a pellicle forms or the growth goes on at the bottom of the vessel, the liquid never becomes cloudy. At a temperature of from 75·2° to 81·2° F., which seems to be the best for this form, the cultures begin to grow in from five to seven days. As regards inoculations of animals, M. Dubard can say little, except that in the course of from seventeen to twenty days there was obtained in the frog a "superb" pleural, pulmonary, mesenteric, hepatic, and splenic tuberculous formation. The results obtained with warm blooded animals the investigators will make the subject of subsequent communications.

The second tumor, examined on April 18, was also renal, and it showed precisely the same lesions and bacilli as the first one. The third carp, which was not very decidedly affected, was kept with a view to provide against possible failures or obstacles in the investigation. M. Dubard inclines to the belief that the microbe found in these carps is a cyprine variety of Koch's bacillus, and that the trinity of tuberculous disease — of man, of birds and of fishes— is one fundamentally.



3.—DETAILS OF INTERLOCKING JOINT—GRATING OF ERIE COUNTY PENITENTIARY CELLS.



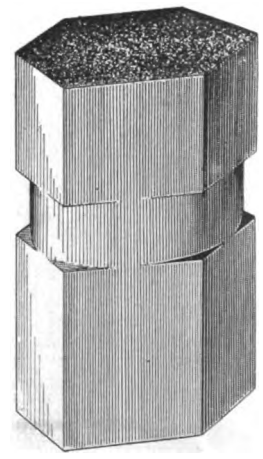
1.—PLAN OF ERIE COUNTY PENITENTIARY.

Dr. Carl Peters Punished.

A special dispatch from Berlin dated November 15 says that the court martial has confirmed the sentence of the lower court upon Dr. Carl Peters, the well known African explorer, former German high commissioner in Africa, ex-chairman of the German Colonial Society. He was charged with extreme cruelty toward the natives when he was commissioner in Africa in 1891. Dr. Peters is dismissed from the German service and has been ordered to pay the entire cost of the prosecution. The indictment charged him with arbitrarily hanging a negro boy in 1891 and the next year a negro girl, and also unjustly making war against Chief Malamia. Dr. Peters protested that he was not guilty and affirmed his belief that in his official capacity he was vested with the power of life or death. He claimed he was obliged to inflict the death penalty in the cases specified in order to save German prestige.

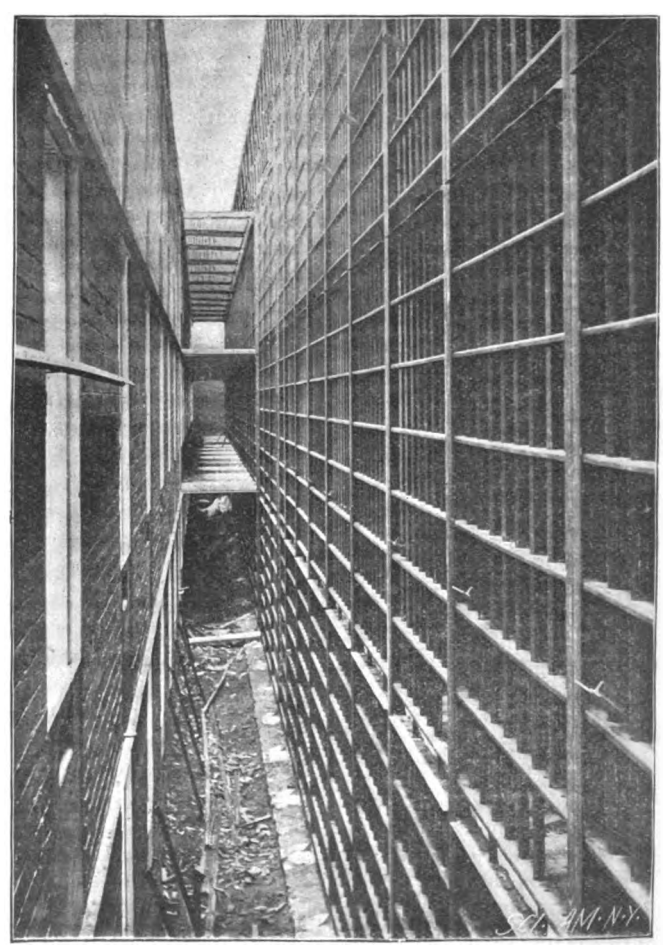
Borax.

The first issue of the Western Homes, published at Topeka, Kansas, contains many practical suggestions. The following is one of them: Borax has a great variety of uses. It is a great purifier. Wash out the sink and clean the kitchen table with it to keep them sweet. It is a good wash for many skin diseases, though it is poisonous to some persons. It should never be used too freely by any, as it combines with the oil of the skin and hair, leaving the skin dry and the hair brashy. It softens water, and if dishes must be washed in hard water, it will prove a great help. In the laundry, it makes the washing easier and helps whiten clothes, especially if soap containing borax is used. Strong borax water will aid in removing stains made by machine grease. It is good to cleanse brushes, combs, silver and glass. It is a good gargle for sore throat. It is said that a tiny pinch put in the water wherein the face is washed will remove freckles, if persisted in. The fact that it is poisonous to some must be remembered in this connection. It will destroy roaches. It whitens the teeth, and is a good wash for inflamed eyes.



4. SECTION OF VERTICAL STEEL BAR.

EGYPT'S population, according to the census just taken, is 9,700,000, an increase of 2,900,000 since 1882, or about 42 per cent in fifteen years.



GUARDS' WALK AROUND THE CELLS.

Digitized by Google